CLAIMS

1. In an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable which is surrounded by a conductive shield connected to a system ground, a method comprising:

a) detecting current pulses in the shield; and

b) in response to detected current pulses, issuing to a pilot station in the aircraft a signal indicating presence of spark in the igniter.

2. In an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable, said igniter and power cable being surrounded by conductive shielding, a method comprising:

a) maintaining a coil outside the shielding;

b) detecting current pulses in the coil; and

c) in response to detected current pulses, issuing to a pilot station in the aircraft a signal indicating presence of spark in the igniter.

3. Method according to claim 2, wherein no components involved in detecting the current pulses penetrate the conductive shielding.

4. Method according to claim 2, wherein the current pulses have a duration D and a frequency F, and wherein detecting the

current pulses comprises:

i) maintaining a series RLC circuit, comprising inductor L, resistor R, and capacitor C, wherein

A) the inductor L comprises the coil, and

B) the RLC circuit amplifies signals induced by the pulses.

5. Method according to claim 2, wherein (1) the current pulses generate voltage pulses in the coil, (2) the coil has an inductance L, and (3) detecting the current pulses comprises:

i) connecting the coil to a circuit containing a resistance R and a capacitance C; and

ii) using a value of capacitance C which causes amplification of the voltage pulses.

6. Method according to claim 5, wherein the amplification of the voltage pulses causes a voltage signal to appear across the capacitance C which is greater than voltage appearing across the coil in the absence of the circuit.

7. In an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable which is surrounded by a conductive shield connected to a system ground, a apparatus comprising:

a) a detector for detecting current pulses in the shield; and

b) an annunciator for issuing a signal indicating presence of spark in the igniter to a pilot station in the aircraft.

8. Apparatus according to claim 7, wherein the signal is issued based on the current pulses.

9. In an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable, said igniter and power cable being surrounded by conductive shielding, apparatus comprising:

a) a coil outside the shielding;

b) a detector for detecting current pulses in the coil; and

c) an annunciator for issuing a signal indicating presence of spark in the igniter to a pilot station in the aircraft, in response to detected current pulses.

10. Apparatus according to claim 9, wherein no components involved in detecting the current pulses penetrates the conductive shielding.

11. Apparatus according to claim 9, wherein the current pulses have a duration D and a frequency F, and further comprising:

i) a series RLC circuit, comprising inductor L, resistor R, and capacitor C, wherein

A) the inductor L comprises the coil, and

B) the RLC circuit is resonant at a steady-state sinusoidal frequency F(res), wherein F(res) lies within the range (0.8)(1/D) to (1.2)(1/D).

12. Apparatus according to claim 9, wherein (1) the current pulses generate voltage pulses in the coil, (2) the coil has an inductance L, and further comprising:

i) a connection between the coil and a circuit containing a resistance R and a capacitance C, wherein the value of capacitance C which causes amplification of the voltage pulses.

13. Apparatus according to claim 12, wherein the amplification of the voltage pulses causes a voltage signal to appear across the capacitance C which is greater than voltage appearing across the coil in the absence of the circuit.

14. Method of starting a gas turbine engine, comprising:

a) causing the engine to rotate;

b) delivering fuel to a combustor in the engine;

c) actuating an igniter to ignite the fuel; and

d) if ignition fails to occur,

i) examining an indicator which produces a signal when the igniter produces spark and

ii) if no signal is detected, taking a predetermined action A.

15. Method according to claim 14, wherein the predetermined action A comprises requesting diagnosis of an ignition system in the engine.

16. Method according to claim 14, and further comprising:

iii) if a spark signal is detected after ignition fails to occur, taking a predetermined action B.

17. Method according to claim 16, wherein the predetermined action B does not include examining an igniter, or replacing an igniter.

18. Method according to claim 14, wherein the engine is located in an aircraft, and the indicator is located at a pilot station in the aircraft.

19. A method of operating a gas turbine engine which powers an aircraft, comprising:

a) maintaining an igniter which is

i) surrounded by a housing, and

ii) fed by a power cable which is surrounded by a conductive shield which is connected to

the housing; and

b) detecting current in the shield, housing, power cable, or a combination thereof, but without electrically contacting the power cable, and, in response to detected current, actuating an annunciator at a pilot station in the aircraft, informing the pilot of the detected spark.

20. Method according to claim 19, wherein the process of detecting current comprises:

c) maintaining a coil adjacent the shield;

d) inducing currents in the coil by currents in the shield;

e) detecting induced currents in the coil; and

f) issuing the signal in response to detection of the induced current.